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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,110	09/22/2006	Takayuki Yamada	TOW-163US	7262

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EXAMINER
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CHUO, TONY SHENG HSIANG

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/594,110	<b>Applicant(s)</b> YAMADA, TAKAYUKI	
	<b>Examiner</b> Tony Chuo	<b>Art Unit</b> 1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 8-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/22/06</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group I, claims 1-7 in the reply filed on 10/16/09 is acknowledged. Claims 8-14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Groups II & III, there being no allowable generic or linking claim.

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

3. The information disclosure statement (IDS) submitted on 9/22/06 was filed on 9/22/06. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Drawings***

4. Figures 6 and 7 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled

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“Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-3 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Buchkremer et al (“Advances in the anode supported planar SOFC technology”, Electrochemical Proceedings Volume 97-18, 1997).

The Buchkremer reference discloses an electrolyte electrode assembly sandwiched between a pair of interconnects (separators), wherein the electrolyte electrode assembly comprises an anode, a cathode, and an electrolyte interposed between the anode and cathode, wherein bosses are formed on the pair of interconnects, wherein a cathode contact layer is provided between the cathode and the

bosses on one of the interconnect, wherein the cathode contact layer comprises a complex oxide that is  $\text{LaCoO}_3$  that inherently has electron conductivity higher than that of the cathode, is capable of inducing oxygen reduction, and is a perovskite complex oxide (See Figure 3 and Table 1).

8. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Stover et al ("Recent developments in anode supported thin film SOFC at research centre julich", Electrochemical Society Proceedings, Volume 99-19, 1999).

The Stover reference discloses an electrolyte electrode assembly sandwiched between a pair of interconnects (separators), wherein the electrolyte electrode assembly comprises an anode, a cathode, and an electrolyte interposed between the anode and cathode, wherein bosses are formed on the pair of interconnects, wherein a cathode contact layer is provided between the cathode and the bosses on one of the interconnect, wherein the cathode contact layer comprises a complex oxide that is  $\text{LaSrMnO}_3$  that inherently has electron conductivity higher than that of the cathode, is capable of inducing oxygen reduction, and is a perovskite complex oxide, wherein  $\text{La}_{0.65}\text{Sr}_{0.3}\text{MnO}_3$  is disclosed as an example of the complex oxide (See Figure 1 and page 820).

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Ukai et al (US 2004/0072060).

The applicant's admitted prior art discloses an electrolyte electrode assembly sandwiched between a pair of separators "6a" & "6b", wherein the electrolyte electrode assembly comprises an anode "3", a cathode "4", and an electrolyte "2" interposed between the anode and cathode, wherein bosses "7a" & "7b" are formed on the pair of separators (See specification, page 1, lines 15-25 and Figure 6).

However, the applicant's admitted prior art does not expressly teach a layer is provided between the cathode and the bosses on one of the separators, the layer comprising material which has electron conductivity higher than that of the cathode, and which is capable of inducing oxygen reduction; wherein the layer comprises a complex oxide containing at least a rare-earth element A, a transitional metal element C, and oxygen O; wherein the rare-earth element A comprises at least one element selected from the group consisting of La, Sm, Nd, and Pr, and the transitional metal element C comprises at least one element selected from the group consisting of Co, Fe, Ni, Cr, Mn, Ga and Ti; wherein the layer further contains an alkaline-earth metal element B, and composition formula of material of the layer is  $A_xB_{1-x}CO_3$  ( $0.5 \leq x \leq 1.0$ ); wherein the rare-earth element A comprises at least one element selected from the group consisting of La, Sm, Nd, and Pr, the transitional metal element C comprises at least one element selected from the group consisting of Co, Fe, Ni, Cr, Mn, Ga and Ti, and the alkaline-earth metal element B comprises at least one element selected from the group

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consisting of Ca, Sr, and Ba; wherein the layer comprises a perovskite complex oxide; and wherein the layer has a thickness of 10  $\mu\text{m}$  or less. The Ukai reference discloses a solid oxide fuel cell comprising an air electrode contact layer that is provided between the air electrode (cathode) and the separator, wherein the air electrode contact layer comprises  $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$ , wherein  $0.1 \leq x \leq 0.5$ , wherein the air electrode contact layer shows higher electric conductivity than that of the air electrode, wherein the air electrode contact layer inherently is capable of inducing oxygen reduction and is a perovskite complex oxide, and wherein the air electrode contact layer has a thickness of 10 to 50  $\mu\text{m}$  (See paragraphs [0085],[0087],[0101]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Applicant's admitted prior art to include a layer is provided between the cathode and the bosses on one of the separators, the layer comprising material which has electron conductivity higher than that of the cathode, and which is capable of inducing oxygen reduction; wherein the layer comprises a complex oxide containing at least a rare-earth element A, a transitional metal element C, and oxygen O; wherein the rare-earth element A comprises at least one element selected from the group consisting of La, Sm, Nd, and Pr, and the transitional metal element C comprises at least one element selected from the group consisting of Co, Fe, Ni, Cr, Mn, Ga and Ti; wherein the layer further contains an alkaline-earth metal element B, and composition formula of material of the layer is  $\text{A}_x\text{B}_{1-x}\text{CO}_3$  ( $0.5 \leq x \leq 1.0$ ); wherein the rare-earth element A comprises at least one element selected from the group consisting of La, Sm, Nd, and Pr, the transitional metal element

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C comprises at least one element selected from the group consisting of Co, Fe, Ni, Cr, Mn, Ga and Ti, and the alkaline-earth metal element B comprises at least one element selected from the group consisting of Ca, Sr, and Ba; wherein the layer comprises a perovskite complex oxide; and wherein the layer has a thickness of 10  $\mu\text{m}$  or less in order to improve current collecting efficiency and to reduce contact resistance between the cathode and the separator, thereby improving the generating performance of the SOFC (See paragraph [0087]).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571)272-0717. The examiner can normally be reached on M-F, 9:00AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a



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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC

/Jonathan Crepeau/  
Primary Examiner, Art Unit 1795